

## Beam Power Tube

For Use in Communications Equip-  
ment at Frequencies Up to 175 Mc.

### 9-PIN MINIATURE TYPE

#### Electrical:

##### Heater Characteristics and Ratings:

Voltage (AC or DC) . . . . .	6.3 $\pm$ 5%	volts
Current . . . . .	0.800	amp

##### Peak heater-cathode voltage:

Heater negative with respect to cathode . . . . .	100 max.	volts
Heater positive with respect to cathode . . . . .	100 max.	volts

##### Direct Interelectrode Capacitances:<sup>0</sup>

Grid No.1 to plate . . . . .	0.15	pf
Grid No.1 to cathode, grid No.3, grid No.2, and heater . . . . .	10.0	pf
Plate to cathode, grid No.3, grid No.2, and heater . . . . .	5.5	pf

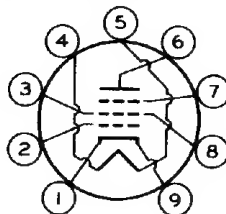
##### Characteristics, Class A<sub>1</sub> Amplifier:

Plate Voltage . . . . .	250	volts
Grid No.3 . . . . .	Connected to cathode at socket	
Grid-No.2 Voltage . . . . .	250	volts
Grid-No.1 Voltage . . . . .	-18	volts
Mu-Factor, Grid No.2 to Grid No.1 . . . . .	8.7	
Transconductance . . . . .	5300	$\mu$ mhos
Plate Current . . . . .	40	ma
Grid-No.2 Current . . . . .	3	ma

#### Mechanical:

Operating Position . . . . .	Any
Type of Cathode . . . . .	Coated Unipotential
Maximum Overall Length . . . . .	2-5/8"
Maximum Seated Length . . . . .	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip) . . . . .	2" $\pm$ 3/32"
Diameter . . . . .	0.750" to 0.875"
Dimensional Outline . . . . .	See General Section
Bulb . . . . .	T6-1/2
Base . . . . .	Small-Button Nova! 9-Pin (JEDEC No.E9-1)
Basing Designation for BOTTOM VIEW . . . . .	9LK

Pin 1-Cathode  
Pin 2-Grid No.1  
Pin 3-Grid No.2  
Pin 4-Heater  
Pin 5-Heater



Pin 6-Plate  
Pin 7-Grid No.3  
Pin 8-Grid No.2  
Pin 9-Cathode

Bulb Temperature (At hottest point on bulb surface) . . . . .	225 max.	$^{\circ}$ C
--	----------	--------------



RADIO CORPORATION OF AMERICA  
Electronic Components and Devices  
Harrison, N. J.

DATA 1  
9-63

# 7558

## → AF POWER AMPLIFIER & MODULATOR — Class AB<sub>1</sub>♦

### Maximum CCS\* Ratings, Absolute-Maximum Values:

DC PLATE VOLTAGE . . . . .	375 max.	volts
GRID No.3 (SUPPRESSOR GRID) . . . . .	0 max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE . . . . .	300 max.	volts
MAX.-SIGNAL DC PLATE CURRENT■ . . . . .	70 max.	ma
MAX.-SIGNAL PLATE INPUT■ . . . . .	21 max.	watts
MAX.-SIGNAL GRID-No.2 INPUT■ . . . . .	2 max.	watts
PLATE DISSIPATION■ . . . . .	10 max.	watts

### Typical CCS Push-Pull Operation:

*Values are for 2 tubes*

DC Plate Voltage . . . . .	300	volts
Grid No.3. . . . .	Connected to cathode at socket	
DC Grid-No.2 Voltage§ . . . . .	250	volts
DC Grid-No.1 Voltage§ . . . . .	-21	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage . . . . .	40	volts
Zero-Signal DC Plate Current . . . . .	40	ma
Max.-Signal DC Plate Current . . . . .	125	ma
Zero-Signal DC Grid-No.2 Current . . . . .	2	ma
Max.-Signal DC Grid-No.2 Current . . . . .	14	ma
Effective Load Resistance (Plate to plate) . . . . .	5000	ohms
Max.-Signal Driving Power . . . . .	0	watts
Total Harmonic Distortion. . . . .	5	%
Max.-Signal Power Output (Approx.) . . . . .	20.5	watts

### Maximum Circuit Values:

Grid-No.1-Circuit Resistance . . . . .	0.1 max.	megohm
--	----------	--------

## → RF POWER AMPLIFIER & OSCILLATOR — Class C Telegraphy† and RF POWER AMPLIFIER — Class C FM Telephony

### Maximum Ratings, Absolute-Maximum Values:

	Up to 175 Mc	
	CCS*	ICAS**
DC PLATE VOLTAGE . . . . .	375 max.	375 max.
GRID No.3 (SUPPRESSOR GRID) . . . . .	0 max.	0 max.
DC GRID-No.2 (SCREEN-GRID) VOLTAGE . . . . .	300 max.	300 max.
DC GRID-No.1 (CONTROL-GRID) VOLTAGE . . . . .	-125 max.	-125 max.
DC PLATE CURRENT . . . . .	70 max.	80 max.
DC GRID-No.2 CURRENT . . . . .	15 max.	15 max.
DC GRID-No.1 CURRENT . . . . .	5 max.	5 max.
PLATE INPUT . . . . .	21 max.	24 max.
GRID-No.2 INPUT . . . . .	2 max.	2 max.
PLATE DISSIPATION . . . . .	10 max.	12 max.

→ Indicates a change.

RADIO CORPORATION OF AMERICA  
Electronic Components and Devices

Harrison, N. J.



## Typical Operation:

*As amplifier at 175 Mc*

	CCS	ICAS	
DC Plate Voltage. . . . .	250	300	300 volts
Grid No.3 . . . . .	<i>Connected to cathode at socket</i>		
DC Grid-No.2 Voltage <sup>□□</sup> . . . . .	200	200	250 volts
DC Grid-No.1 Voltage <sup>⊕⊕</sup> . . . . .	-40	-42	-55 volts
Peak RF Grid-No.1 Voltage . . . . .	47	52	62 volts
DC Plate Current. . . . .	60	70	80 ma
DC Grid-No.2 Current. . . . .	3.7	3.7	5.1 ma
DC Grid-No.1 Current (Approx.) . . . . .	1.5	2.1	1.6 ma
Driver Power Output (Approx.) <sup>▲▲</sup> . . . . .	1	1	1.5 watts
Useful Power Output (Approx.) <sup>*</sup> . . . . .	6.5	8.5	10 watts

## Maximum Circuit Values:

Grid-No.1-Circuit Resistance. . . . .	0.1 max.	0.1 max.	megohm
---------------------------------------	----------	----------	--------

## PLATE-MODULATED RF POWER AMPLIFIER — Class C Telephony ←

*Carrier conditions per tube for use  
with a maximum modulation factor of 1*

## Maximum Ratings, Absolute-Maximum Values:

*Up to 175 Mc*

	CCS	ICAS	
DC PLATE VOLTAGE. . . . .	300 max.	300 max.	volts
GRID No.3 (SUPPRESSOR GRID) . . . . .	0 max.	0 max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE . . . . .	300 max.	300 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE . . . . .	-125 max.	-125 max.	volts
DC PLATE CURRENT. . . . .	60 max.	70 max.	ma
DC GRID-No.2 CURRENT. . . . .	10 max.	10 max.	ma
DC GRID-No.1 CURRENT. . . . .	5 max.	5 max.	ma
PLATE INPUT . . . . .	15 max.	17.5 max.	watts
GRID-No.2 INPUT . . . . .	1.4 max.	1.4 max.	watts
PLATE DISSIPATION . . . . .	7 max.	8 max.	watts

## Typical Operation:

*At 175 Mc*

DC Plate Voltage. . . . .	250	250	volts
Grid No.3 . . . . .	<i>Connected to cathode at socket</i>		
DC Grid-No.2 Voltage <sup>▲</sup> . . . . .	250	250	volts
DC Grid-No.1 Voltage <sup>*</sup> . . . . .	-70	-75	volts
From a grid-No.2 resistor of . . . . .	33000	33000	ohms
RF Grid-No.1 Voltage. . . . .	75	80	volts
DC Plate Current. . . . .	60	70	ma
DC Grid-No.2 Current. . . . .	2.5	3	ma
DC Grid-No.1 Current (Approx.) . . . . .	2.1	2.3	ma
Driving Power (Approx.) <sup>▲▲</sup> . . . . .	1	1	watt
Useful Power Output <sup>*</sup> . . . . .	6.5	7.5	watts

← Indicates a change.



**RADIO CORPORATION OF AMERICA**  
Electronic Components and Devices  
Harrison, N. J.

DATA 2  
9-63

# 7558

## Maximum Circuit Values:

Grid-No.1-Circuit

Resistance . . . . . 0.1 max. 0.1 max. megohm

## FREQUENCY MULTIPLIER

### Maximum Ratings, Absolute-Maximum Values:

	CCS	ICAS	
DC PLATE VOLTAGE . . . . .	375 max.	375 max.	volts
GRID No.3 (SUPPRESSOR GRID) . . .	0 max.	0 max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE . . . . .	300 max.	300 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE . . . . .	-125 max.	-125 max.	volts
DC PLATE CURRENT . . . . .	50 max.	60 max.	ma
DC GRID-No.2 CURRENT . . . . .	15 max.	15 max.	ma
DC GRID-No.1 CURRENT . . . . .	5 max.	5 max.	ma
PLATE INPUT . . . . .	13 max.	15 max.	watts
GRID-No.2 INPUT . . . . .	2 max.	2 max.	watts
PLATE DISSIPATION . . . . .	10 max.	12 max.	watts

### Typical Operation:

*As doubler to 175 Mc*

DC Plate Voltage . . . . .	250	250	volts
Grid No.3 . . . . .	<i>Connected to cathode at socket</i>		
DC Grid-No.2 Voltage . . . . .	200	250	volts
DC Grid-No.1 Voltage** . . . . .	-53	-66	volts
From a grid-No.1 resistor of . . . . .	53000	44000	ohms

→ Indicates a change.

RADIO CORPORATION OF AMERICA  
Electronic Components and Devices

Harrison, N. J.





7558

7558

## BEAM POWER TUBE

Peak RF Grid-No.1			
Voltage. . . . .	60	74	volts
DC Plate Current . . . . .	50	60	ma
DC Grid-No.2 Current . . . . .	2.6	3.5	ma
DC Grid-No.1 Current			
(Approx.) . . . . .	1	1.5	ma
Driving Power (Approx.) <sup>▲▲</sup> . . . . .	0.4	0.6	watt
Useful Power Output* . . . . .	3	4.5	watts

*As tripler at 175 Mc*

DC Plate Voltage . . . . .	200	250	volts
Grid No.3. . . . .	<i>Connected to cathode at socket</i>		
DC Grid-No.2 Voltage . . . . .	200	250	volts
DC Grid-No.1 Voltage <sup>●●</sup> . . . . .	-90	-120	volts
From a grid-No.1			
resistor of. . . . .	50000	70000	ohms
Peak RF Grid-No.1			
Voltage. . . . .	105	130	volts
DC Plate Current . . . . .	50	60	ma
DC Grid-No.2 Current . . . . .	3	3.9	ma
DC Grid-No.1 Current			
(Approx.) . . . . .	1.85	1.7	ma
Driving Power (Approx.) <sup>▲▲</sup> . . . . .	0.4	0.6	watt
Useful Power Output* . . . . .	1.4	2.3	watts

**Maximum Circuit Values:**

Grid-No.1-Circuit			
Resistance . . . . .	0.1 max.	0.1 max.	megohm

○ Without external shield.

◆ Subscript 1 indicates that grid-No.1 current does not flow during any part of the input cycle.

● Continuous Commercial Service.

■ Averaged over any audio-frequency cycle of sine-wave form.

§ Obtained preferably from a fixed supply.

† Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of of the audio-frequency envelope does not exceed 115% of the carrier conditions.

●● Intermittent Commercial and Amateur Service.

□□ Obtained preferably from a separate source or from the plate-voltage supply with a voltage divider. If a series resistor is used, it should be adjustable to obtain the desired operating plate current after initial tuning adjustments are completed.

●● Obtained from a grid-No.1 resistor, or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor.

▲▲ Driver stage is required to supply tube losses and rf-circuit losses. The driver stage should be designed to provide an excess of power above the indicated values to take care of variations in line voltage, components, initial tube characteristics, and tube characteristics during life.

\* Measured at load.

▲ Obtained preferably from a separate source modulated along with the plate supply, or from the modulated plate supply through a series resistor. It is recommended that this resistor be adjustable to obtain the desired operating plate current after initial tuning adjustments are made.

7558



7558

## BEAM POWER TUBE

\* obtained from a grid-No.1 resistor or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor. The combination of grid-No.1 resistor and fixed supply has the advantage of not only protecting the tube from damage through loss of excitation but also of minimizing distortion by bias-supply compensation.

## CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Heater Current. . . . .	1	0.745	0.855	amp
Transconductance. . . . .	1,2	4200	6400	$\mu$ mhos
Plate Current . . . . .	1,2	30	50	ma
Plate Current . . . . .	1,3	-	50	$\mu$ a
Grid-No.2 Current . . . . .	1,2	-	7.5	ma
Reverse Grid-No.1 Current . . .	1,4	-	2	$\mu$ a
Heater-Cathode Leakage Current:				
Heater negative with respect to cathode. . . . .	1,5	-	20	$\mu$ a
Heater positive with respect to cathode. . . . .	1,5	-	20	$\mu$ a
Leakage Resistance:				
Between grid-No.1 and all other electrodes tied together. . . . .	1,6	100	-	megohms
Between plate and all other electrodes tied together. . . . .	1,7	100	-	megohms

Note 1: With 6.3 volts ac or dc on heater.

Note 2: With plate voltage of 250 volts, grid No.3 connected to cathode, grid-No.2 voltage of 250 volts, and grid-No.1 voltage of -18 volts.

Note 3: With plate voltage of 250 volts, grid No.3 connected to cathode, grid-No.2 voltage of 250 volts, and grid-No.1 voltage of -48 volts.

Note 4: With plate voltage of 180 volts, grid No.3 connected to cathode, grid-No.2 voltage of 250 volts, grid-No.1 resistor of 0.1 megohm, and cathode resistor of 170 ohms.

Note 5: With 100 volts dc between heater and cathode.

Note 6: With grid No.1 100 volts negative with respect to all other electrodes tied together.

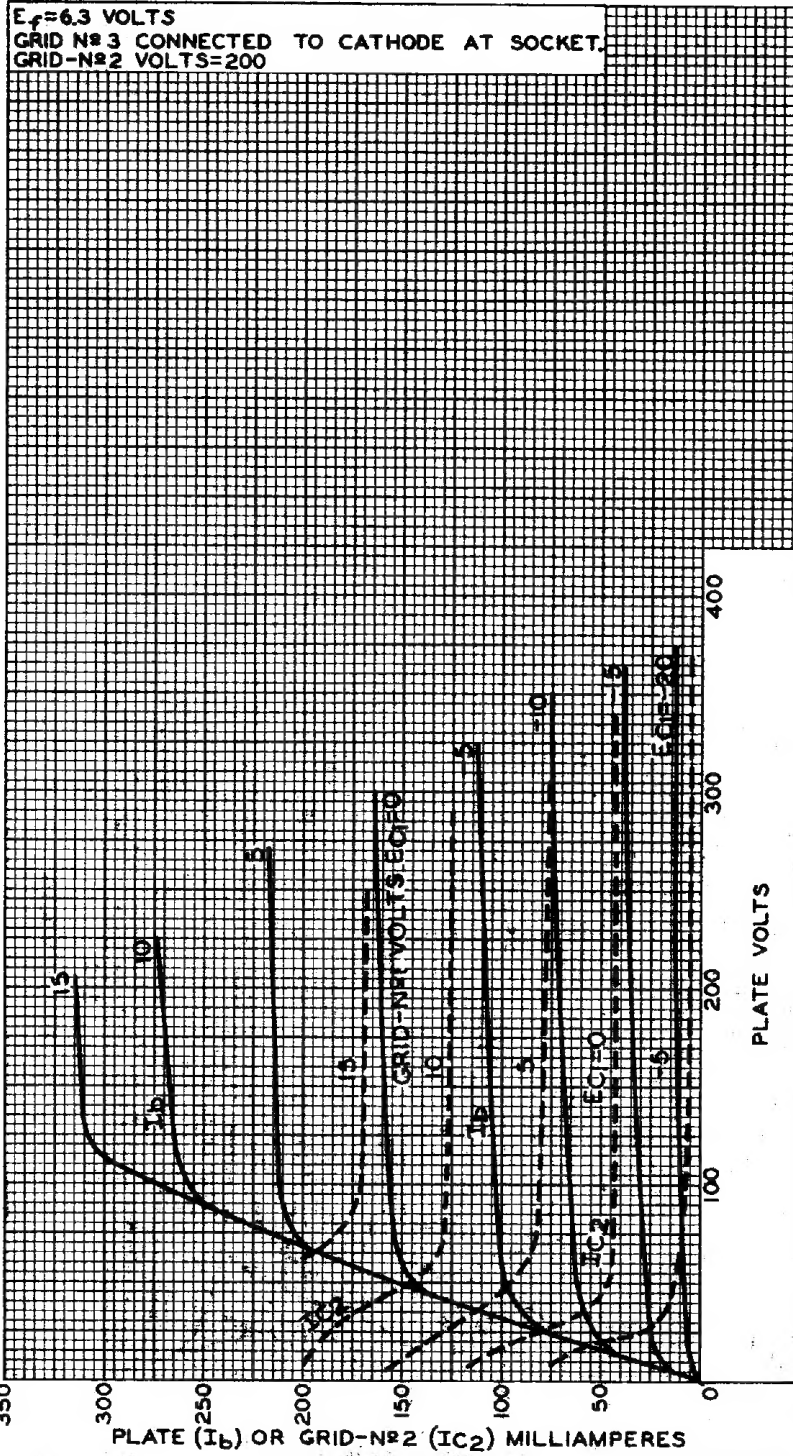
Note 7: With plate 300 volts negative with respect to all other electrodes tied together.



7558

7558

# AVERAGE CHARACTERISTICS



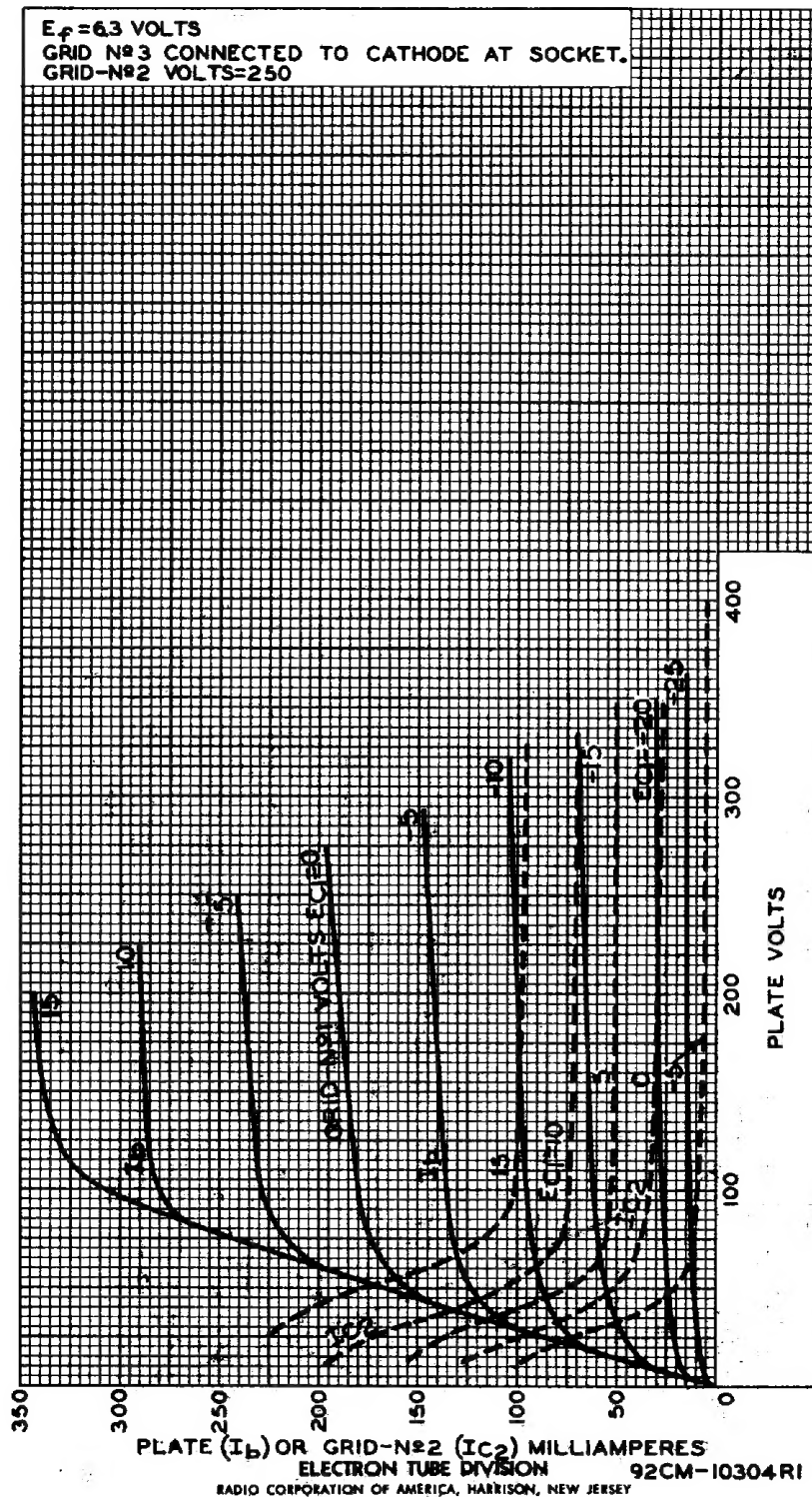
ELECTRON TUBE DIVISION 92CM-10305RI  
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7558



7558

# AVERAGE CHARACTERISTICS

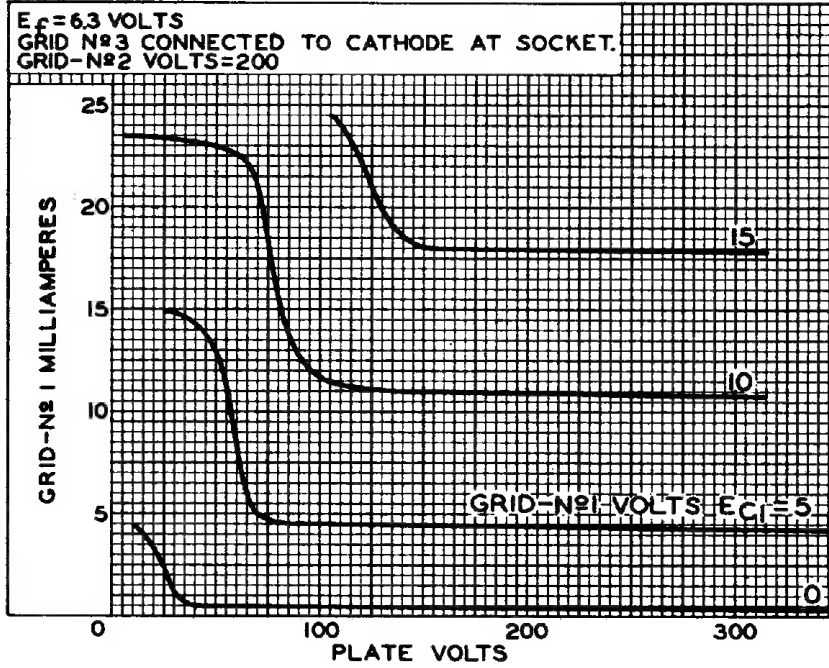




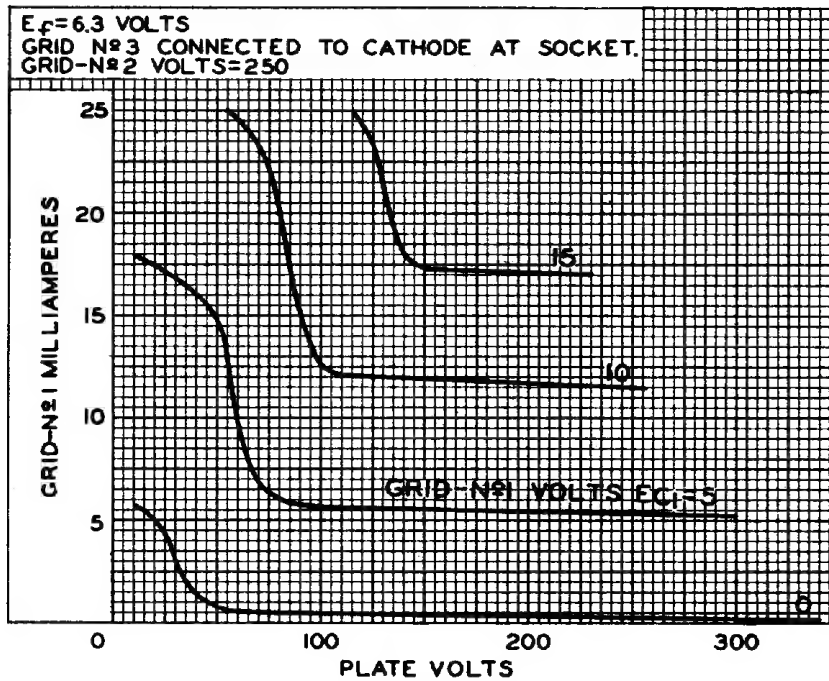
7558

7558

### AVERAGE CHARACTERISTICS



92CS-10306R1



ELECTRON TUBE DIVISION  
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CS-10307R1

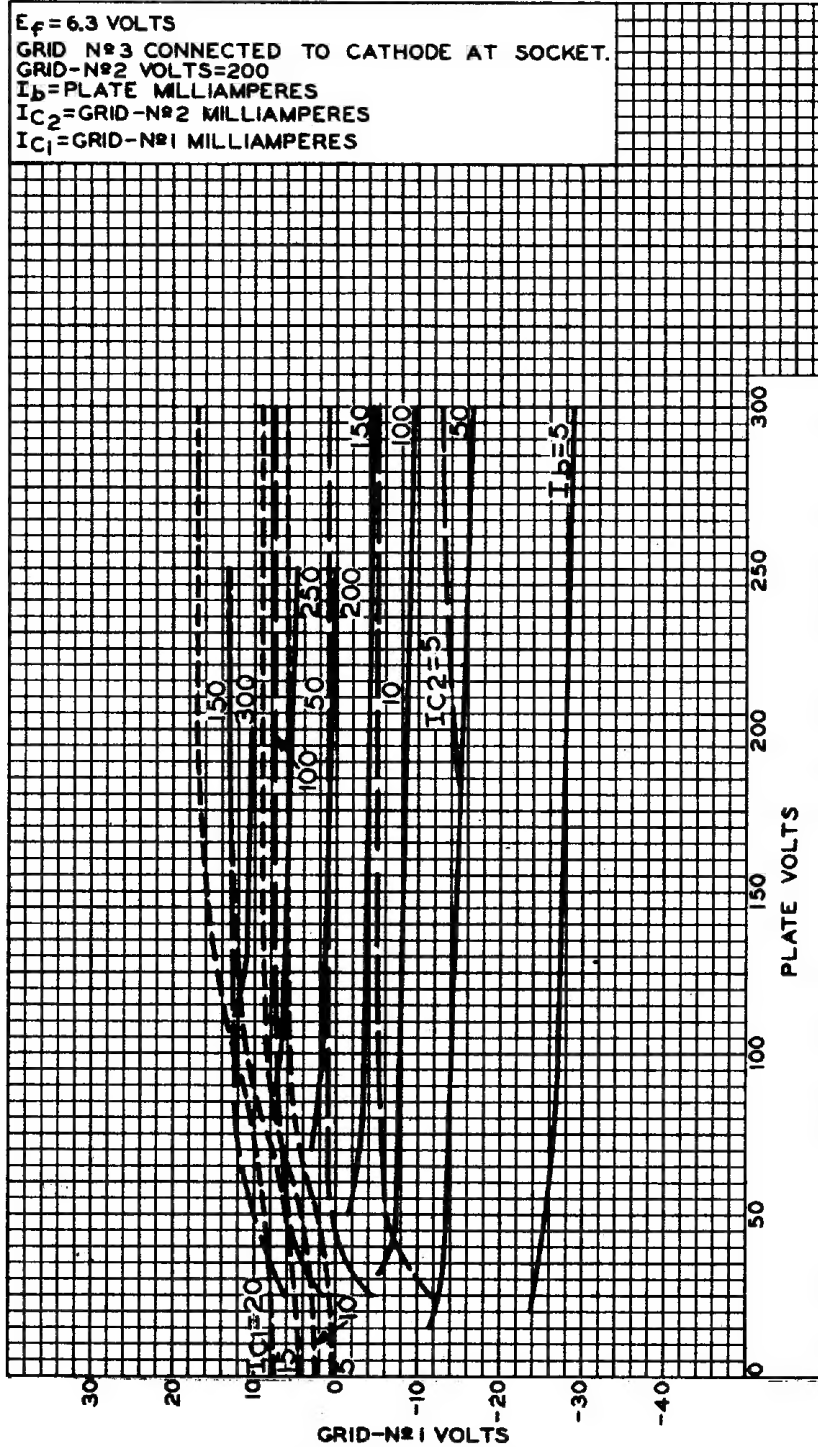
7558



7558

## AVERAGE CONSTANT-CURRENT CHARACTERISTICS

$E_f = 6.3$  VOLTS  
 GRID-Nº3 CONNECTED TO CATHODE AT SOCKET.  
 GRID-Nº2 VOLTS=200  
 $I_b$  = PLATE MILLIAMPERES  
 $I_{C2}$  = GRID-Nº2 MILLIAMPERES  
 $I_{C1}$  = GRID-Nº1 MILLIAMPERES



ELECTRON TUBE DIVISION  
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-10303RI



7558

7558

# AVERAGE CONSTANT-CURRENT CHARACTERISTICS

